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1959

Is There a Credit Crunch in East Asia?

*Wei Ding**Ilker Domaç**Giovanni Ferri*

To what extent can tight monetary policy help restore market confidence in the aftermath of financial crises? Analyzing the East Asian experience, this study concludes that protracted and heavy reliance on tight monetary policy might even be counterproductive. The study finds that the credit crunch is widespread, and its negative impact particularly affects small banks and enterprises.



Summary findings

The issue of the credit crunch in the aftermath of the Asian crisis has stimulated much debate. Indeed, some features of the East Asian economies, such as bank-based financial systems and high leverage, make them particularly vulnerable to monetary and financial shocks. Under such circumstances, the credit channel of transmission of these shocks is likely to lead to a credit crunch, affecting the flow of bank loans to those agents — households and small and medium-sized enterprises — for whom close substitutes for bank credit are unavailable. In turn, the disruption to the availability of finance for bank-dependent borrowers may stymie economic activity.

In practice, however, it is difficult to detect the credit channel effects that lead to a credit crunch. Reliance on trends of credit aggregates alone is inadequate to prove that there has been an adverse shift in the supply of loans: even a decline or slowdown of credit could stem from a decrease or deceleration in demand. A frequently used methodology to overcome this problem focuses on both credit aggregates and the yield spread between bank loans and risk-free assets, such as government bonds. If this spread rises while credit aggregates slow down, one can conjecture that the supply of loans has either decreased more or increased less than demand. But

further qualification is needed. The increase of the spread might simply reflect a rising risk premium triggered by the fact that the negative shock reduces the net worth of economic agents because of larger financial outlays. Accordingly, the relevant spread to capture the worsening credit conditions that affect bank-dependent borrowers is the spread between bank lending rates and corporate bonds. The yield spread between corporate and government bonds measures the general risk premium.

The study applies this methodology to Indonesia, Malaysia, the Philippines, the Republic of Korea, and Thailand and shows that the credit crunch is widespread, while its negative impact particularly affects small banks and enterprises. On the basis of the findings, the authors claim that: (1) a protracted and heavy reliance on tight monetary policy, entailing high real interest rates, appears inappropriate for restoring market confidence; (2) it is desirable to consider alternative policy instruments that do not place further stress on the banking sector and on its lending to the corporate sector; and (3) policy actions are warranted to alleviate the strain that the crisis has put on small banks and enterprises.

This paper — a product of the East Asia and the Pacific Region — is part of a larger effort in the region to analyze the patterns and consequences of the East Asian crisis, with particular reference to the link between real and financial sector. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Flavia Fernandes, room MC8-134, telephone 202-458-0453, fax 202-522-1557, Internet address ffernandes@worldbank.org. The authors may be contacted at wding@worldbank.org, idomac@worldbank.org, or gferri@worldbank.org. August 1998. (38 pages)

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by

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1. INTRODUCTION

It is a subject of controversy whether the East Asian crisis-stricken countries are suffering from a credit crunch. While there is anecdotal evidence that even good firms are finding it difficult to obtain credit to finance production and investment, macroeconomic data on monetary and financial developments do not unequivocally support the assertion that a credit crunch is occurring. A better understanding of this issue is crucial for the designing of appropriate policy actions and for the recovery prospects for the East Asian countries. For example, it is widely held that after currency devaluation, recovery will be led by export-driven demand, entailing a relevant transfer of resources from the non-traded to the traded sectors.¹ Yet, a pervasive credit crunch could retard or even jeopardize such a transfer, thus undermining recovery prospects.

This paper aims to shed some light on whether and to what extent the East Asian countries are currently suffering from a credit crunch. First, we propose a systematic framework to evaluate the occurrence and the magnitude of the credit crunch. In particular, we make reference to well established literature studying the transmission of shocks through the credit channel, often referred to as the credit view.² We draw on this literature to help identify the channels through which the negative shocks hitting East Asia may have propagated the credit crunch in these economies. This framework allows us to deploy a consistent approach in analyzing the issue across all countries and to go beyond exclusively relying on macroeconomic indicators and anecdotal evidence, which are often in contradiction. The framework also enables us to assess how credit crunch affects differently across the various sectors of the economy. Second, we apply the framework to five East Asian countries: *Indonesia, Korea, Malaysia, the Philippines, and Thailand*.

¹ See JP Morgan Economic Research (1998) and IMF's World Economic Outlook (1998) for more on this.

² Bernanke and Gertler (1995) provide a comprehensive discussion of the credit channel and its components. This type of literature is based on the assumption that informational asymmetries play a major role in financial markets. See also Mishkin (1991) who studies financial crises from an historical perspective

The results from applying the framework show that the region is suffering from an overall credit crunch, although the situation differs considerably across the countries in question. In Korea and Malaysia, where banks adjusted their rates more rapidly to rising money market rates, the wedge between lending rates and risk-free asset yields has significantly widened, indicating an increasing strain on credit supply by banks through the price mechanism. In the other countries, the credit squeeze has been rendered more through quantity rationing than through increases in lending rates. Furthermore, in all countries for which relevant detailed data were readily available showed unequivocal evidence of a flight to quality: banks shifting towards less risky assets (e.g. government securities); depositors turning to those banks perceived to be more secure (i.e., foreign banks, large banks, and state owned banks). All in all, this evolution appears to pose serious threats particularly to the financing of small and medium sized enterprises, and to sectors most affected by informational asymmetries.

The paper is structured as follows: Section 2 introduces our strategy to assess the existence of the credit crunch, while Section 3 presents the empirical results obtained from applying the framework to the data gathered for the five countries. The last Section summarizes the main results and points to possible avenues for future related research.

2. THE FRAMEWORK

2.1 Beyond the Key Indicators of the Monetary Policy Stance

Under normal circumstances, examining the evolution of the key macro variables --e.g. the relationship between monetary aggregates, interest rates, or other monetary policy instruments and nominal income -- may be sufficient to evaluate the monetary policy stance. If the key monetary policy instrument(s) are not in line with expected price and output developments (i.e., nominal production potential), then it can be concluded that the monetary policy stance is excessively tight (loose) since there is less (more) liquidity than is needed to accommodate nominal production.

In a situation of crisis, however, assessing the monetary policy stance becomes complicated as the relationship between monetary policy instruments and nominal

income changes drastically. Accordingly, it may be misleading to focus solely on key indicators of monetary policy for the purpose of detecting “*a credit crunch*”. Analyses of monetary and credit aggregates need to be complemented with a more detailed investigation of the channels through which firms, banks, and households are affected by changes in monetary policy. In fact, as Bernanke and Gertler (1995) argue, when the economy is hit by a negative shock, it is often impossible to distinguish whether the usual deceleration in bank lending stems from a shift in demand or supply. On the one hand, the corporate sector may be demanding less credit because fewer investments are undertaken; on the other hand, it could be that banks are less willing to lend and, therefore, charge higher interest rates or decline more credit applications.

In order to address this problem of identification, we will rely on literature that examining the transmission of monetary policy restrictions through the credit channel. In particular, we will focus on the evolution of the spread between bank lending rates and rates on risk-free assets (see Bernanke and Blinder, 1988). To Return to the example above, once we recognize that lending has shrunk while the spread has widened, it becomes clear that demand for loans could not have declined more than loan supply.

2.2 The Propagation of the Credit Crunch

According to the Council of Economic Advisors (1991), credit crunch is “*a situation in which the supply of credit is restricted below the range usually identified with prevailing market interest rates and the profitability of investment projects*”. When a credit crunch occurs, it alters the relationship between credit availability and interest rates. A credit crunch mostly occurs in two forms: (i) a leftward shift of the credit supply curve at a given interest rate level (price mechanism), and (ii) rationing of the credit supply, irrespective of interest rates (non-price mechanism; Box 1 and Box 2 provide more details on the credit crunch concept).

Identifying a credit crunch in practice involves investigating the channels through which firms, banks, and economic activity are affected. For instance, both increases in

the cost of borrowing and credit rationing is likely to lead businesses and households to shelve some investments or current expenditures for which funding is no longer available or has become too costly.

Box.1
DEFINING CREDIT CRUNCH

“Credit crunch” as a concept is often ill-defined and casually employed. Many people use the term “credit crunch” loosely and in an interchangeable way to describe a variety of phenomena including “tightening of monetary policy”, “shortage in the supply of funds”, and “credit rationing by banks” etc. Even in the literature concerning credit crunch, there doesn’t appear to be a general consensus on a precise definition for the “credit crunch” concept. It is, therefore, useful to explore more carefully the concept of “credit crunch” and to differentiate various terms describing credit conditions, particularly the difference between *credit slowdown* and *credit crunch*.

A *credit slowdown* can be defined as a general decline in credit growth that may have been generated by either demand or supply factors, or both. Broad changes in the demand for credit may be cyclical (varying with the pace of economic activity) or structural (induced by changes in the tax code etc.). Credit supply can be influenced by changes in financial regulations, structures, and institutions. Monetary policy and autonomous shifts in lender and borrower psychology will have an impact on both credit supply and demand.

Unlike *credit slowdown*, which is a fairly general term, *credit crunch* specifically refers to a reduction in the available supply of credit. During a period of credit crunch, lenders become reluctant to lend either because of funding problems stemming from disintermediation, or because regulators have urged credit restraint. The reluctance to lend may also stem from the lenders’ own balance sheet weaknesses (capital constraints) and their reassessment of borrowers’ average credit quality. Although credit crunches are often deemed as primarily supply phenomena, it is difficult to disentangle supply from demand effects since some of the same factors that reduce the willingness to lend may also restrain the desire to borrow.

A *credit crunch* implies changes in the relationship between credit availability and interest rates: (i) less credit may be available over a wide range of interest rates -- a condition consistent with a leftward shift in a credit supply schedule, or (ii) the reduction in credit availability may bear little relation to the level of rates -- a condition that takes place when allocation occurs via non-price mechanisms. Since credit is normally allocated across potential borrowers by the interest rate, the term credit rationing is commonly used for situations in which the supply of credit is allocated through non-price mechanisms. In general, credit rationing episodes are considered to be a subset of credit crunches in which the interest rate is not the price underlining the credit allocation mechanism. Credit crunches that are characterized by credit rationing may be difficult to alleviate through monetary policy alone.

Source: *Draws on Federal Reserve Bank of New York Quarterly Review, Spring 1993.*

2.2.1 Increases in the Cost of Borrowing

In a situation of monetary tightening and/or credit crunch, the external finance premium (*the difference in cost between funds raised externally and funds generated internally to the firm*) is likely to increase, thus increasing the cost of borrowing. Typically, this increase in the cost of borrowing is the effect of two channels: the **balance sheet channel** and the **bank lending channel**.³

Box.2
TYPES OF CREDIT RATIONING

Credit rationing can take the following three forms:

- (i) *Pure rationing* occurs when some borrowers are denied credit while otherwise identical borrowers receive credit. In this case, the lender has set an interest rate at which the demand for funds exceeds the supply;
- (ii) *Divergent views rationing* occurs when borrowers would like to borrow at prevailing rates and feel their loans do not present a serious credit risk, but the lenders disagree and refuse to lend. In this situation, borrowers who cannot obtain credit at the prevailing interest rate may conclude that the lenders are rationing credit. Even when borrowers and lenders agree on the appropriate criteria, they may have different forecasts for future asset prices and cash flows;
- (iii) *Sectoral rationing* refers to the application of credit standards that effectively shut off the flow of credit to entire sector, such as certain classes of borrowers or types of borrowing. For some borrowing sectors, lenders may find it difficult to distinguish between good and bad credits and therefore choose to make no loans at all. Sector rationing appears in combination with divergent views rationing when borrowers have private information or different views about their own creditworthiness.

Source: *Federal Reserve Bank of New York Quarterly Review, Spring 1993.*

On the one hand, the **balance sheet channel** emphasizes the potential depressing impact of the monetary squeeze on borrowers' assets and profits, including variables such as borrowers' net worth, cash flow and liquid assets, which increases the risk premium. The increase in the level of interest rates triggered by the monetary squeeze raises corporate risks because it reduces both business profits and the value of assets firms have posted as collateral. This will generally increase the wedge between the interest rates at which corporates can borrow and the yields on risk-free assets (See also Box 3).

For the US, several studies provide convincing empirical evidence on the importance of the above mentioned interest rate spread. More precisely, Kashyap, Stein,

³ See again Bernanke and Gertler (1995) and Hubbard (1994) for a detailed analysis.

and Wilcox (1993) show that in general, tight monetary conditions bring about a widening in the spread between commercial paper rate and T-bill rate; Gertler, Hubbard, and Kashyap (1990), and Friedman and Kuttner (1993) document that an increase in the spread is a good predictor of a subsequent decline in, respectively, investment and real output.

On the other hand, the **bank lending channel** focuses more specifically on the retrenchment in the supply of loans by depository institutions that may follow the monetary restriction. In particular, the chain of actions runs as follows. The monetary squeeze raises the level of interest rates even for assets such as T-bills and Government bonds which may be held to be risk-free, abstracting from sovereign risks that should anyhow be undiversifiable for domestic agents. In general, banks cannot increase deposit rates by as much since they have to build required reserves which neither bear remuneration nor offer a below-market yield. This entails that banks suffer a deposit drain as investors reshuffle their portfolios away from deposits and towards assets with more attractive yields. If, as is usually the case, banks are not indifferent between making loans to the private sector and holding Government securities -- i.e. Government securities provide a cost efficient way to carry a secondary liquidity cushion, banks may be unwilling to deplete their holding of such securities below some threshold-- following the deposit drain they will probably enact a restriction in their loan supply. Yet this would not imply that bank lending rates should increase more than corporate debt market rates if all firms were indifferent between borrowing at banks and issuing debt on the market. In reality, however, we know that --even in countries with most developed financial markets like the US, let alone countries with thin and rudimentary financial markets-- the majority of businesses do not issue debt on the market. As a result, after the monetary tightening we can expect that the wedge between bank lending rates and corporate debt market rates may also increase (See also Box 3).⁴

⁴ A similar impact could be induced by the introduction of stricter regulations on banks: e.g. the imposition of higher capital adequacy ratios Bernanke and Lown (1992).

BOX. 3**SOME USEFUL CONCEPTS**

The interest rate paid by corporations issuing debt on the market --the corporate debt market rate (CDMR)-- can be expressed as:

$$\text{CDMR} = \text{RF} + \text{GRP} \quad (1)$$

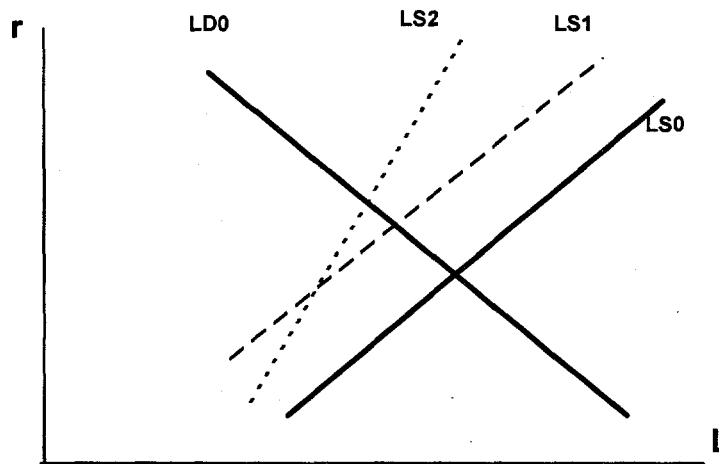
where RF is the risk-free rate and will be proxied by the Government bond yield or the T-bill rate, and GRP stands for the general risk premium for the private sector and, by construction, will be measured by the yield differential between corporate and government bonds (or the spread between commercial paper and T-bill rates).

It also is useful to think of the lending rate (LR) as consisting of three components:

$$\text{LR} = \text{RF} + \text{GRP} + \text{BDBSS} \equiv \text{CDMR} + \text{BDBSS} \quad (2)$$

where RF, GRP, CDMR have been defined above, and BDBSS is the bank dependent borrowers' specific spread and can be proxied by the spread between the lending rate and the yield on corporate bonds (or the spread between lending and commercial paper rates).

The following graph schematically depicts what happens as a result of the **bank lending channel** and contrasts it with the impact of the **flight to quality**. The graph has the loan quantity and the loan rate respectively on the x and y axes. Taking LD0 as the demand for loans as given, we hypothesize for convenience that only the loan supply moves: the **bank lending channel** effect is represented by the parallel shift from LS0 to LS1; instead, the **flight to quality** effect is given by the shift with counter-clockwise translation from LS0 to LS2.



As an additional contributing factor besides the **balance sheet channel** and the **bank lending channel**, banks may not only restrain credit generally but also adopt more stringent lending policies vis-à-vis customers that are perceived to be less credit worthy -- a phenomenon labeled “**flight to quality**”. That is, when a deposit drain squeezes their resources and/or credit risk heightens, banks will try to cherry-pick customers who are ex ante more credit-worthy: e.g. those having a more established credit record or able to post more collateral. Whereas the bank lending channel may be thought of as a parallel leftward shift in the loan supply, when banks enact a flight to quality, however, the leftward shift will not be parallel but it will penalize more the riskier borrowers, i.e. most likely those who were already charged higher loan rates (See also Box 3). In turn, as stressed by Bernanke, Gertler, and Gilchrist (1996), the flight to quality in bank lending may trigger a **financial accelerator** effect along the following causal chain: the negative shock precipitates the economy into a recession; the recession makes borrowing constraints tighter; tighter borrowing constraints amplify the recession, and so on.⁵

2.2.2 Credit Rationing

Whereas an assessment of changes in the cost of borrowing can be reasonably accomplished, it is extremely difficult to identify and measure credit rationing in practice. Intensifying credit rationing is certainly a relevant aspect in the credit crunch. One instance of credit rationing could be related to the **flight to quality** phenomenon that we referred to above. Another form could be a reallocation of bank assets away from lending to the corporate sector, and towards government securities and foreign exchange instruments.

2.3 Sectoral Issues

While sketching above the channels through which monetary tightening and credit crunch are transmitted to the economy, we have already made clear that some of

⁵ A model deploying financial accelerator effects was proposed by Kyiotaki and Moore (1997). Lang and Nakamura (1995) report evidence of a flight to quality in bank lending for the US.

these effects have asymmetric impacts across the various classes of customers. These aspects deserve further elaboration because they have important bearings on how to interpret the credit crunch and, especially, on which policy actions are best suited to mitigate its undesirable consequences.

The balance sheet channel in principle has a symmetric impact on the economy. It raises the risk premium and thus the cost of borrowing for all firms, irrespective of their financial structure. In practice, however, even the balance sheet channel will likely penalize the small and medium-sized enterprises (SMEs) more since they typically do not have access to the commercial paper market.

The lending channel and **credit rationing** specifically affect **bank-dependent borrowers**, i.e. those firms that cannot directly place liabilities on the open market and the equity market. This should particularly be the case for SMEs.⁶ In the first place, they are too small to justify the fixed costs entailed by listing securities. In addition, even when they have the intention of issuing debt on the market, they would most likely refrain from doing so because given the low liquidity of their debt, investors would ask for very high yields, thus making issuance unattractive to SMEs. SMEs would also be specifically penalized by the **flight to quality**. Lenders perceive them to be more risky since they generally have a shorter track record and typically release less --and less structured-- information.⁷

Furthermore, when the credit crunch ensues, there may be an additional channel negatively affecting SMEs in terms of availability and cost of external finance, that is **flight to quality (safety) by depositors**. Envisaging increased fragility of the intermediaries, depositors may shift their savings towards institutions that are perceived to be less likely to go bankrupt. For instance, **foreign banks** could be deemed safer than domestic ones; smaller banks may be viewed **less likely to be bailed out by the**

⁶ Gertler and Gilchrist (1994) show evidence consistent with this hypothesis.

⁷ Bernanke, Gertler and Gilchrist (1996) report evidence consistent with this hypothesis. A negative bias similar to that regarding SMEs might apply to fast-growing firms, since they have a higher ratio of expected future profits to the current value of physical assets and thus can provide lower collateral.

government; and private banks are less likely than state-owned banks to be covered by government guarantees. Thus, an additional **credit squeeze** may hit those **customers borrowing from smaller banks**,⁸ **private banks**, or **domestic banks which are suffering from the deposit flight**, and typically SMEs depend more than other firms on small, private and domestic banks' lending.⁹ The institutions which receive new flows of funds often have no established relationship with the borrowers of those institutions losing resources, and are thus less likely to make loans to those customers.

2.4 The Shocks Causing the Credit Crunch in East Asia

The key factors leading to the specific credit crunch in East Asia can be divided into two broad categories: external factors stemming from the crisis itself and domestic factors predominantly associated with initial policy responses.

A major reversal of international capital movements took place in 1997. According to data from the Institute of International Finance (IIF), net international inflows to the ASEAN 5 countries produced increasingly strong inflows reaching \$93 billion in 1996. In 1997, there was an outflows of \$12 billion, associated with the loss of confidence in some of the EA countries. Drawing on data from the Bank of International Settlements and from IIF, Radalet and Sachs (1998) estimate a capital outflow of \$34 billion in the second half of 1997 -- a negative shock of 3.6 percent of GDP for the five countries under consideration. The short-term structure of their foreign borrowing was also an important element behind the drastic reversal (Chart 1).

Unprecedented exchange rate devaluation (Chart 2) provided a major unanticipated shock (at least in its magnitude) to the corporate and financial sectors of the EA crisis-countries. This, in turn, multiplied the debt service burden and gave rise to

⁸ Kashyap and Stein (1994, 1997) argue that small banks should be more hit by monetary restrictions than large ones.

⁹ Berger, Kashyap and Scalise (1995) document a strong correlation between relative size of the lending bank and relative size of the borrowing firm in the US: i.e. small firms tend to borrow from small banks and large firms to borrow from large banks.

extensive losses on the large part of unhedged corporate debt denominated in foreign currencies. Widespread corporate distress also put a strain on financial intermediaries.

Tight monetary conditions were enacted to preempt further devaluation and avoid hyperinflation. Increasing real interest rates (Chart 3) aggravated corporate distress and bank fragility. Excessively high interest rates (not justified by economic fundamentals) can contribute to the credit crunch and aggravate financial instability mainly owing to the following reasons (Mishkin, 1998):

- i) As demonstrated by Stiglitz and Weiss (1981) and by several other studies, asymmetric information and the resulting adverse selection problem can lead to credit rationing, a situation in which some credit-worthy borrowers are denied loans even when they are willing to pay a higher interest rate. As rising interest rates exacerbate the adverse selection problem (the likelihood that the lender is attracting a bad credit risk), banks restrict the loan supply, possibly leading to a substantial decline in investment and aggregate economic activity (Greenwald and Stiglitz, 1993). Indeed, some empirical research shows that a small rise in the riskless interest rate can sometimes provoke a very large decrease in lending and even a possible collapse of the loan market (Mankiw, 1986).
- ii) Increases in interest rates have a significant impact on both firms' and households' balance sheets. A rise in interest rates heightens the debt burden causing a deterioration in balance sheets: corporate cash flow decreases and so do resources available to finance spending for households carrying net debt positions. Consequently, the adverse selection problem becomes more severe for potential lenders to these firms and households, again leading to a decline in lending and economic activity.
- iii) Rising interest rates can also negatively affect banks, in turn, possibly feeding back to depress lending. To the extent that the increased debt burden triggers widespread failures, the quality of bank loan portfolios deteriorates, thus weakening banks' capitalization. In addition, banks typically borrow short and lend long: a rise in interest rates may cause a decline in net worth (the interest rate rise lowers the value of assets with longer duration more than it raises the value of liabilities with their shorter duration).

Chart 1
Short-term Share in International Debts (BIS, as of June 1997)

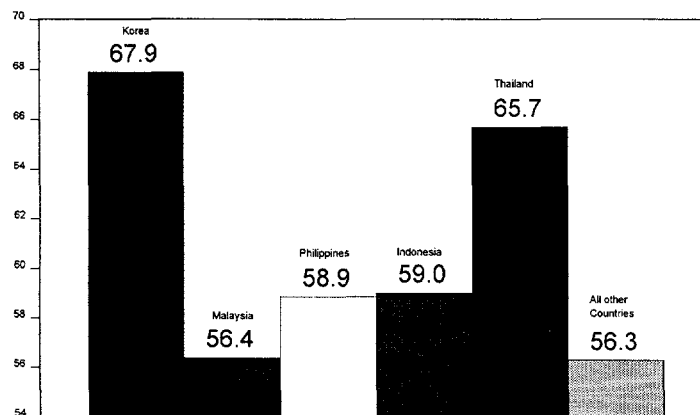


Chart 2
EXCHANGE RATE TRENDS IN EAST ASIA
(Monthly Averages, 1996.01=100)

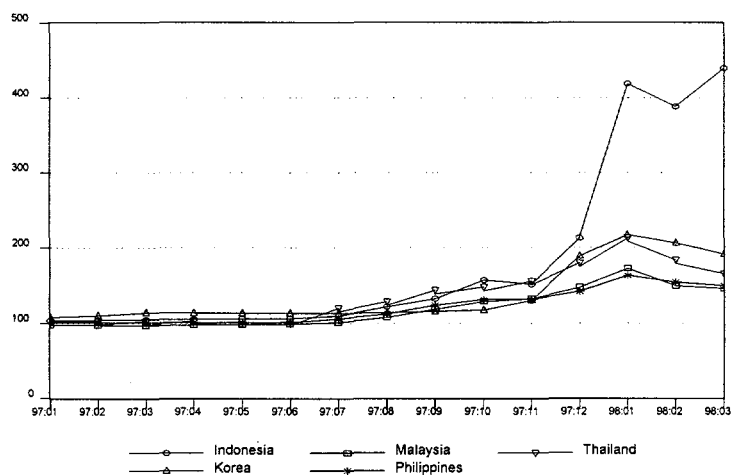
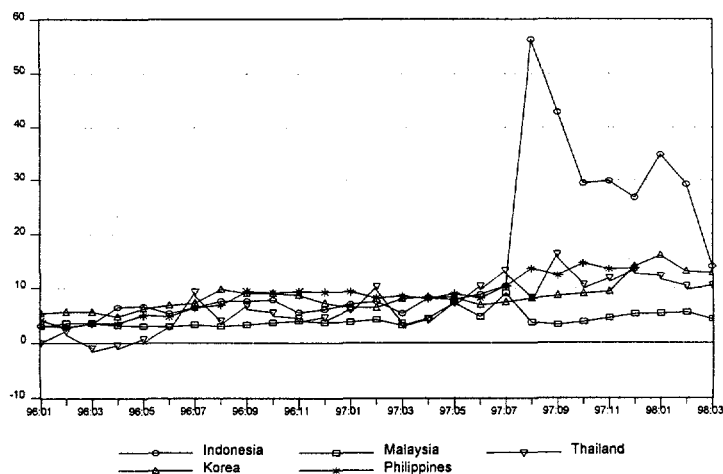


Chart 3
REAL MONEY MARKET RATES
(money market rate - 12-month CPI inflation)/(1+inf)



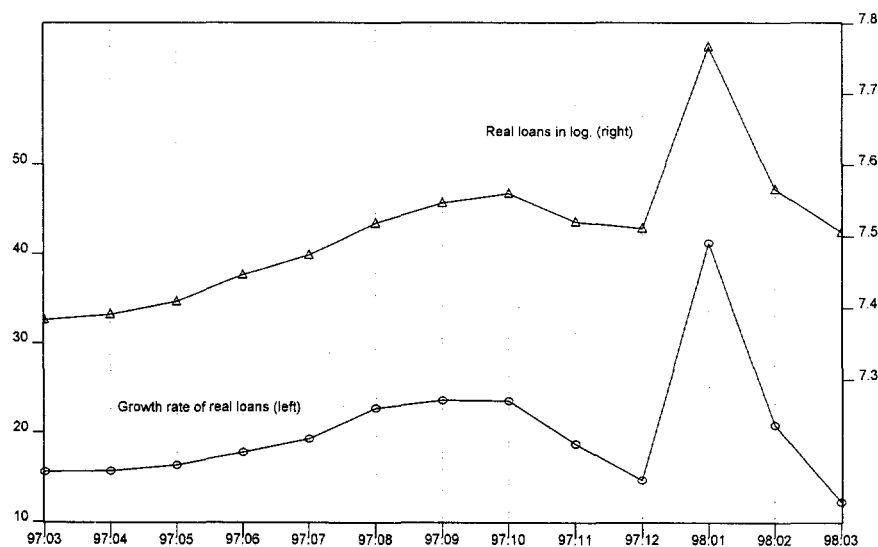
3. INDIVIDUAL COUNTRY EXPERIENCES¹⁰

3.1 Indonesia

The situation in Indonesia is controversial. On one hand, there is no striking indication of a country-wide credit crunch on the basis of movements in monetary and credit aggregates; on the other, strong sectoral shifts in the flows of funds occurred, likely leading to bottlenecks in the availability of financial resources and to localized credit crunch.

Chart I2 reports the value of returned checks as a percentage of checks presented for clearing, generally a leading indicator of bankruptcies, and the mean value of returned checks, which we would expect to grow when the composition of returned checks shifts from household expenditures to corporate payments. Both variables sizably increased in the second half of 1997, suggesting widespread and severe corporate financial distress.

Chart I2
GROWTH RATE OF REAL LOANS¹¹



¹⁰ Unless otherwise specified, all data are obtained from either the International Monetary Fund's IFS or from the respective countries' Central Bank's publications and Websites. The sample period used and the variables employed are determined by the availability of data from these sources.

¹¹ Growth rates are computed on year-on-year basis and deflated by the CPI, unless otherwise indicated.

CHART 12
TRENDS IN RETURNED CHECKS

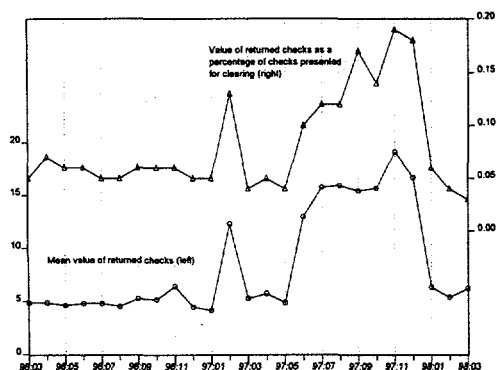


CHART 13
REAL GROWTH OF DEPOSITS, LOANS, AND FOREIGN SHARE IN FUNDING

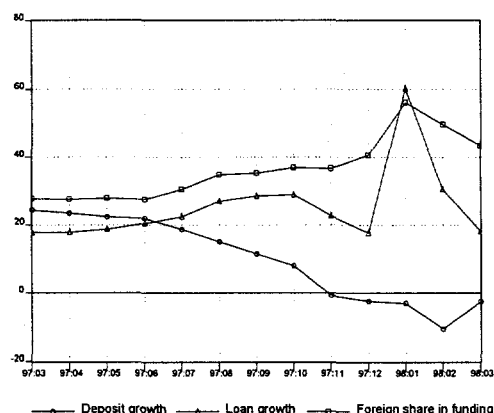


Chart 11 and 13 show that, contrary to what one might expect in a credit crunch, loan growth was strong even in real terms and the ratio of excess reserves to deposits did not increase. Loan growth, however, was not financed via regular deposit growth (which became negative in real terms), but via funds denominated in foreign currency whose share on total resources --i.e. foreign funds/(deposits + foreign funds)-- strongly increased from less than 30 to beyond 50 percent at the peak of the crisis.¹² Indeed, the negative trend in deposits seems to reflect a widespread change in depositors' attitude towards banks and a declining desire to keep their funds in Rupiah.

Chart 14
RATIO OF EXCESS RESERVES TO DEPOSITS

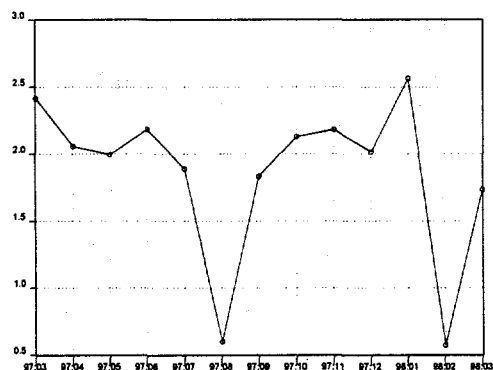
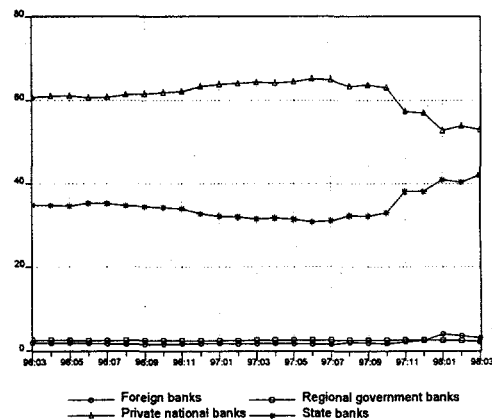


Chart 15
MARKET SHARE TIME & SAVINGS DEPOSITS



¹² We include in foreign funds both foreign currency deposits by residents and banks' borrowing abroad.

The situation of “quasi-bank run” in Indonesia ¹³ seems to be confirmed by the fact that there was a substantial reshuffle in market shares.

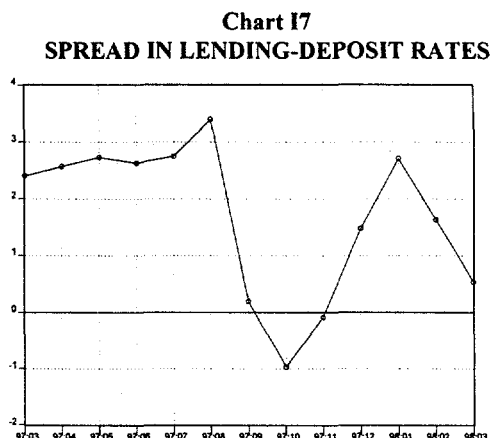
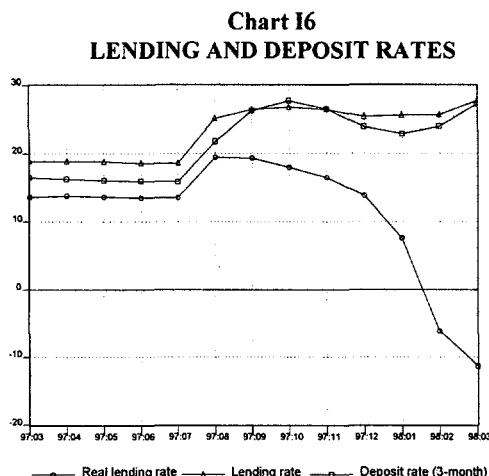


Chart I5 shows that between mid 1997 and the beginning of 1998 the share of deposits of state banks (on which depositors may expect the Government to cast its support) went from 30 to 40 percent, and that of foreign banks doubled while that of private national banks plummeted from almost two thirds to just above 50 percent.¹⁴ This seems in line with the conjecture of a **flight to quality (safety) by depositors** as suggested above.

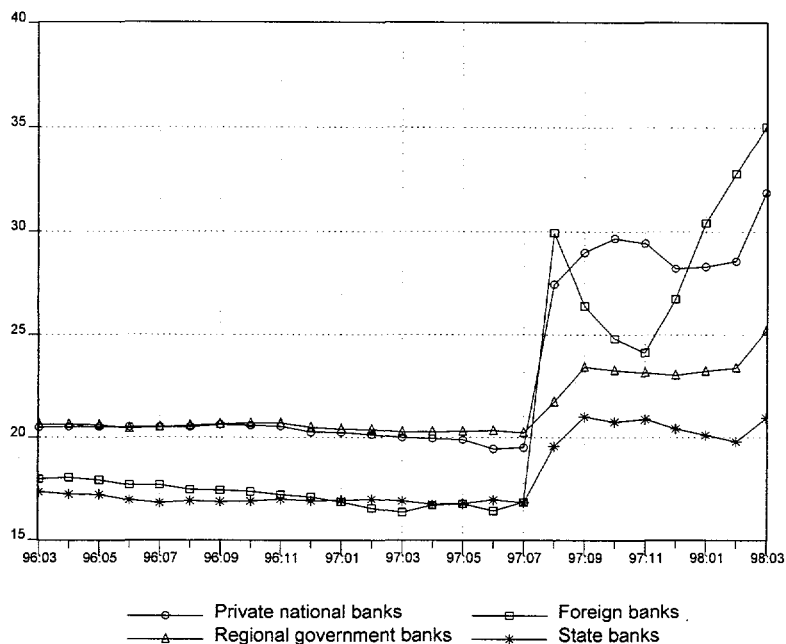
Therefore, the evidence that overall bank lending rates did not increase, but rather diminished and became negative in real terms (Chart I6), needs to be interpreted with some caution, given that various types of banks were specialized in lending to different borrowers: i.e. state banks could be more oriented to lending to enterprises owned by the state or having strong connections with the government, while the reverse could happen for private national banks. In particular, we may reasonably conjecture that customers of (some) private national banks were hit more than others in terms of increasing cost of credit (as Chart I8, shows lending rates did increase substantially more at private national

¹³ “Economic crisis is eroding the faith of Indonesians in their country’s banking system. Depositors respond to every rumor, however wild, by rushing to withdraw their savings from the neighborhood bank” from “Indonesia Tries Mildly to Fix Its Banks” - The Economist April 11-17, 1998.

¹⁴ A policy recommendation on this respect might be to introduce a deposit insurance scheme that could possibly put an end to the hemorrhage of deposits out of private banks, which are wrongly perceived as more risky because they might enjoy government support to a lesser extent.

banks than at state banks) and also in terms of increased probability of being credit rationed (since resources available to lend out were shrinking at private national banks, Chart I3). Finally, the decrease in the spread between lending and deposit rates has also made Indonesian banks more fragile.

Chart I8
WORKING CAPITAL LOAN RATES BY TYPE OF BANKS



3.2 Korea

There is evidence supporting to the existence of a credit crunch in the case of Korea. There are clear indications that the credit crunch has been operating through the balance sheet and lending channels. There is also evidence of a flight to quality by banks (and possibly by depositors) as captured by an increase in banks' holdings of government securities (and a rise in the spread between CDs and yield on government bonds).

As a result of the serious structural inadequacies --highlighted by the liquidity problems-- combined with the adverse consequences of the crisis, Korea experienced a sharp decline in industrial production at the end of 1997 and, even further in the beginning of 1998 (Chart K1). The downward trend in share prices (Chart K2) also

confirms the deteriorating economic conditions associated with structural weaknesses and the crisis itself.

Chart K1
INDEX OF INDUSTRIAL PRODUCTION

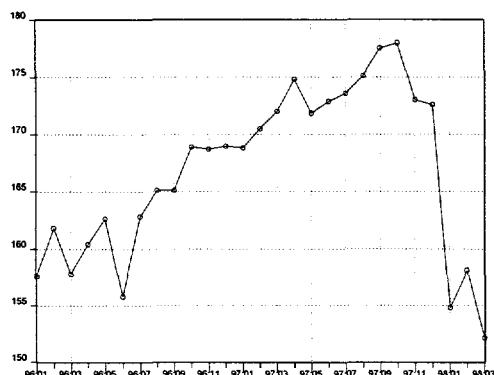
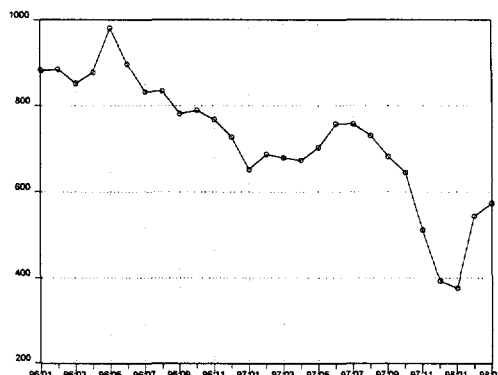


Chart K2
SHARE PRICES



In order to both combat the inflationary pressures arising from won depreciation and restore credibility of its foreign exchange and financial markets, the Central Bank has liberalized and raised interest rates in January 1998. The three-year benchmark bond yield peaked to **22%** in the middle of January from **12%** on the year-earlier period. In the meantime, banks reportedly became reluctant to lend and started calling in loans that would have been rolled over in different circumstances.

The evidence from monetary and credit aggregates are not clear-cut on whether a credit crunch occurred in Korea. On the one hand, growth rate of real loans remained positive (Chart K3); though there has been a downward trend since March 1997 and there was a moderate downward trend in banks' reserves in 1997, after the major reduction in 1996 induced by the lowering of the reserve ratios (Chart K4). On the other hand, real money market interest rates -- as long as we consider CPI actual inflation -- rose substantially by the end of 1997 (Chart K5).

Chart K3
GROWTH RATE OF REAL LOANS

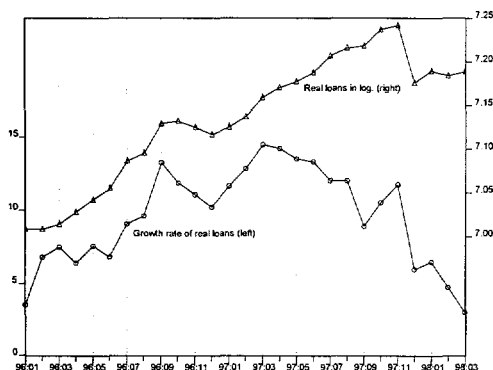
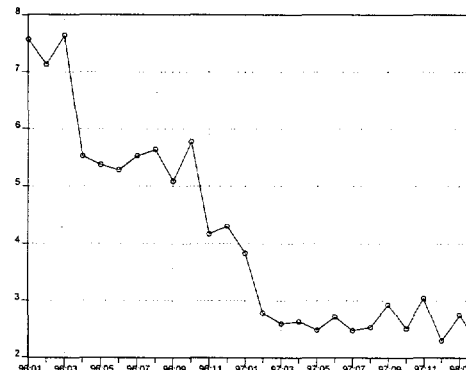


Chart K4
THE RATIO OF BANKS' TOTAL RESERVES TO DEPOSITS



The ratio of dishonored checks and bills to the total increased to 0.52 at the peak of the crisis in December 1997 from 0.17 in 1996 (an increase of 206 percent), indicating the magnitude and seriousness of the financial distress in the country.

Chart K5
MONEY MARKET RATES AND INFLATION

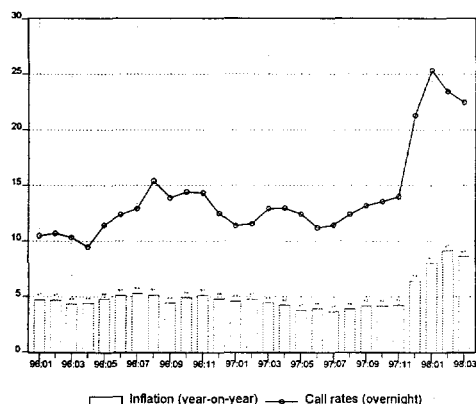
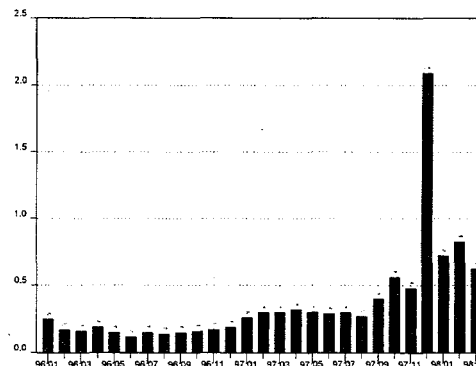


Chart K6
THE RATIO OF DISHONORED BILLS TO THE TOTAL



Further investigation shows that Korea experienced a **sharp increase in the risk premium on corporate debt**, as captured by the rising yield differential between corporate and government bonds (the domestic risk-free assets). Chart K7 shows that the **yield differential between corporate and government bonds** increased from about 100 basis points until October to 197 b.p. in November 1997, reached 899 b.p. in the following month at the peak of the crisis and declined relatively thereafter, though it still remained very high (678 b.p., 453 b.p., and 378 b.p. during the first three months of 1998). This observation suggests the operation of the credit crunch through the **balance sheet channel**.

The **lending channel** effect is also at work: the spread between the overdraft lending rate and the yield on corporate bonds increased since September, reached 13.2 percentage points in December 1997, and remained close to 6 percentage points during the first two months of 1998.

The available data for the period from January 1996 to February 1998 provides some evidence on the existence of a **flight to quality** in bank lending. As can be seen from Chart K8, banks have increased their holdings of government securities in relation to their assets during the period under consideration. This is usually interpreted as a signal of a decline in banks' willingness to lend as they devote an increasing part of their assets to risk free government securities. In addition, there is also some evidence reflecting the perception of bank fragility on the part of depositors. The spread between bank issued CDs and the yield on government bonds (Chart K9) notably widened by the end of 1997 and in the first two months of 1998. In turn, this could be linked to a **flight to quality by depositors**, as they shift their savings towards institutions that are perceived to be less likely to go bankrupt.

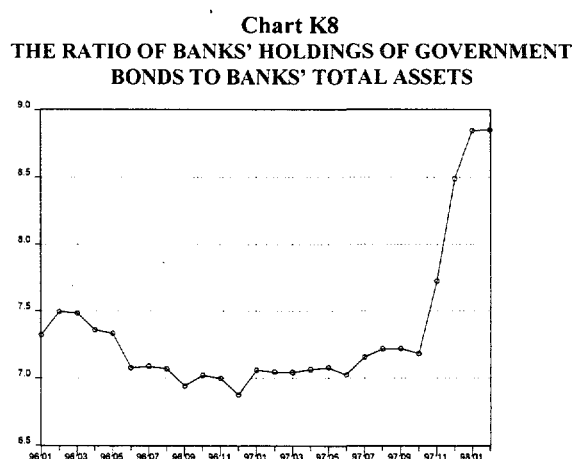
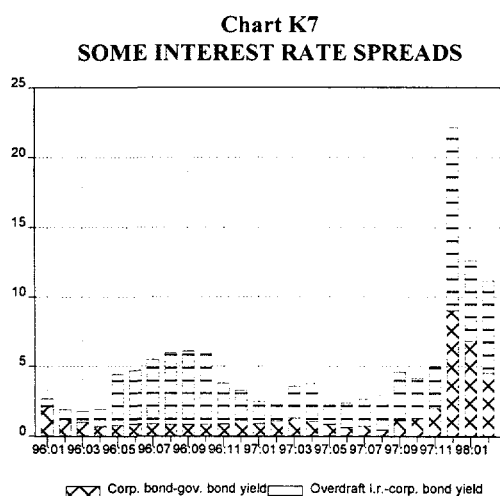
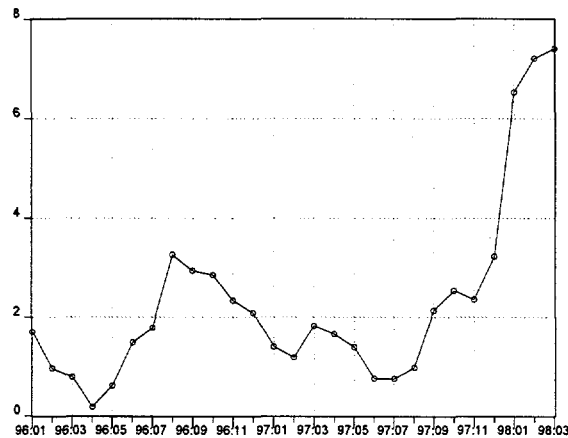


Chart K9
SPREAD BETWEEN CDs AND THE YIELD ON
GOVERNMENT BONDS



3.3 Malaysia

The key indicators of the framework lend support to the existence of a credit crunch in Malaysia. There has been a significant increase in both the general risk premium and the bank-dependent borrowers' specific spread, reflecting the working of balance sheet and lending channels. The credit crunch appears to be more acute at Merchant Banks, specialized in lending to SMEs. There are also signs of a flight to quality both by banks and depositors, which further worsens SMEs' ability to borrow.

Chart M1 and M5 present the evolution of some key interest rates and inflation. It should be pointed out that lending rates had been kept artificially low since the onset of the crisis in order to cushion heavily indebted local companies from its full impact. More specifically, lending rates were pegged to the so-called base lending rates (BLRs) -- the rates commercial banks charge their best customers -- in August 1997. The Central bank lifted the cap on BLRs in November 1997. By mid-December most banks were posting BLRs of 10.35 (the permitted maximum), given that BLRs were once again tied to the three-month average interbank rate of the previous month.

CHART M1
EVOLUTION OF INTEREST RATES AND INFLATION

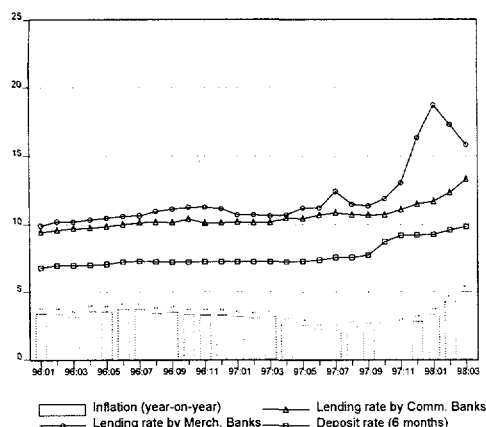
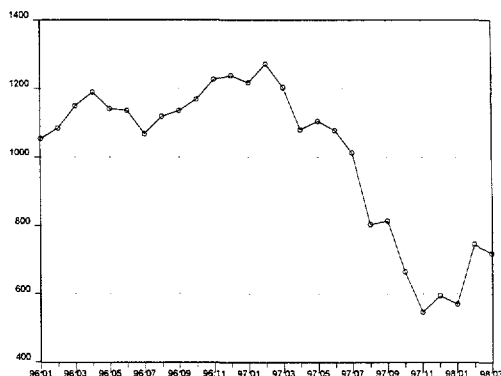


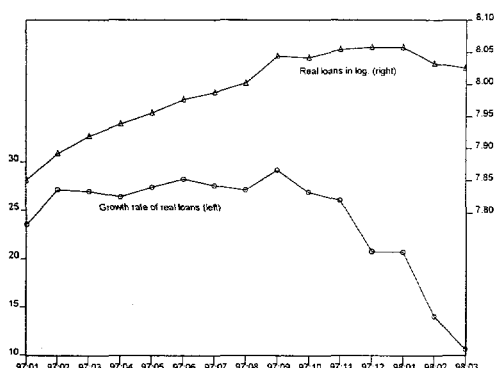
CHART M2
STOCK MARKET INDEX



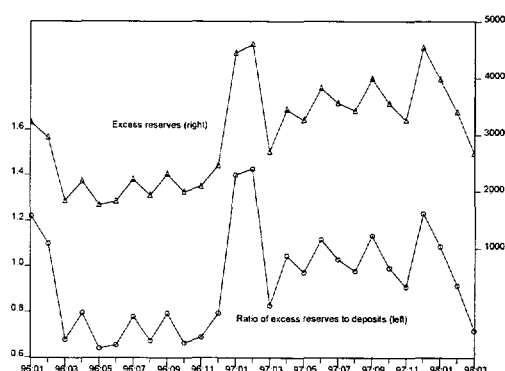
Banks are heavily exposed to portfolio investors who have used shares to securitize their debts. In fact, significant portion of the debt across the economy is collateralized in this way. The plunge in equity prices (Chart M2) has devalued the guarantees, obliging banks to demand that they be supplemented, or that the debts be acquitted.

The private sector is heavily geared: the average debt-equity ratio of Malaysian companies is reported to be close to **200%** -- well above international norms. As a result, the upward trend in interest rates in the wake of the crisis exerted tremendous financial strains on heavily leveraged companies by substantially increasing their debt burden. Furthermore, the Government recently ordered banks to limit lending, increase provisioning and adopt a stricter definition of non-performing loans as well as more transparent disclosure practices. All these developments led to a decline in lending activities and an increase in banks' excess reserves as illustrated by Chart M3 and Chart M4. It appears that there has been a marked increase in excess reserves held by commercial banks with the Central Bank in line with the government's above mentioned orders and perhaps banks' inclination to restore their liquidity to more comfortable levels in the event of large withdrawals.

**CHART M3
GROWTH RATE OF REAL LOANS**



**CHART M4
BANKS' EXCESS RESERVES (in million RM)
AND THEIR RATIO TO DEPOSITS**



**CHART M5
EVOLUTION OF SOME KEY INTEREST RATES**

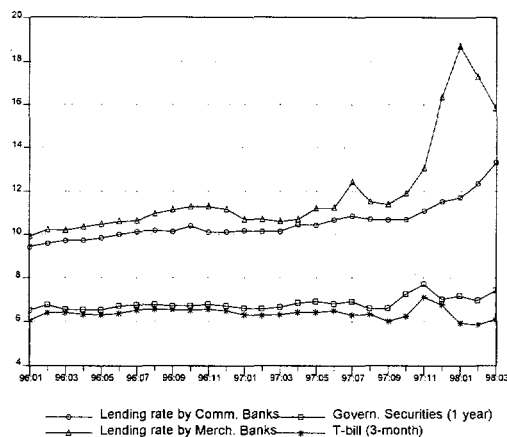


Chart M6 and Chart M7 underscore that there has been a marked increase in both general risk premium and bank dependent borrowers' specific spread -- evidence supporting balance sheet and lending channels. The increase is more prominent in the case of customers of merchant banks, compared to those of commercial banks. Due to the lack of data on corporate bond yields (and commercial paper rates) it is impossible for us to decompose the wedge between lending rate and risk-free yield into GRP and BDBSS.

CHART M6
SPREAD BETWEEN LENDING RATE BY MERCHANT
BANKS AND 3-MONTH T-BILL RATE AND
GOVERNMENT BONDS

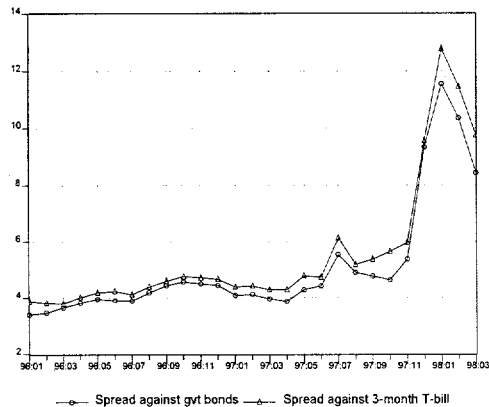
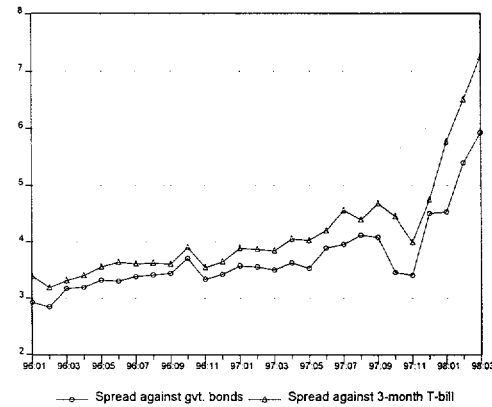


CHART M7
SPREAD BETWEEN LENDING RATE BY
COMMERCIAL BANKS AND 3-MONTH T-BILL RATE
AND GOVERNMENT BONDS



As indicated in Chart M8, there has also been a notable increase in the spread between 1-year time deposits and yield on government bonds since June 1997. This highlights a rising perceived riskiness of banks and thereby could be linked to a **flight to quality by depositors**. This hypothesis, indeed, receives some support from the upward trend of the share of foreign banks in total deposits as individuals move their deposits to foreign banks since they may be considered safer than domestic banks. To the extent that foreign banks are less willing to lend and the prospects for borrowers of domestic banks to receive credit from foreign banks is low, this will have an adverse impact on domestic companies' activities, and eventually on the entire economy.

CHART M8
SPREAD BETWEEN 1-YEAR TIME DEPOSITS AND
GOVERNMENT BONDS (1-year)

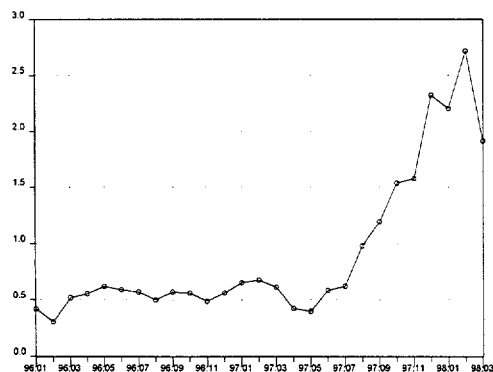
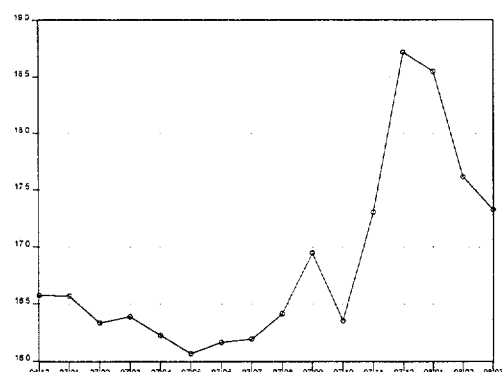
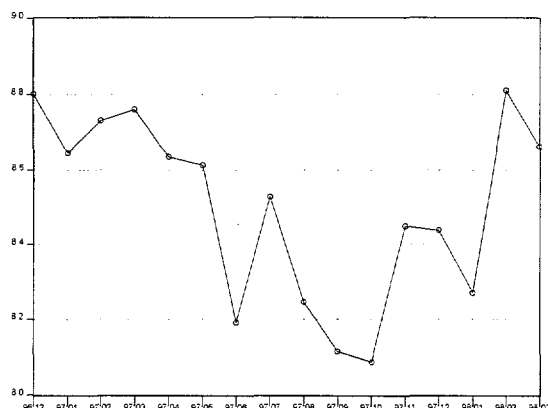


CHART M9
SHARE OF FOREIGN BANKS IN TOTAL DEPOSITS



Moreover, it appears that there has been **flight to quality in bank lending**, as evidenced by the upward trend of the share of government securities in commercial banks' total assets. As can be seen from Chart M10, banks have increased their holdings of government securities in relation to their total assets since October 1997. This, in turn, may be interpreted as a sign of a decline in banks' willingness to lend as they devote increasing part of their assets to risk free government securities.

CHART M10
THE SHARE OF GOVERNMENT SECURITIES IN
COMMERCIAL BANKS' TOTAL ASSETS

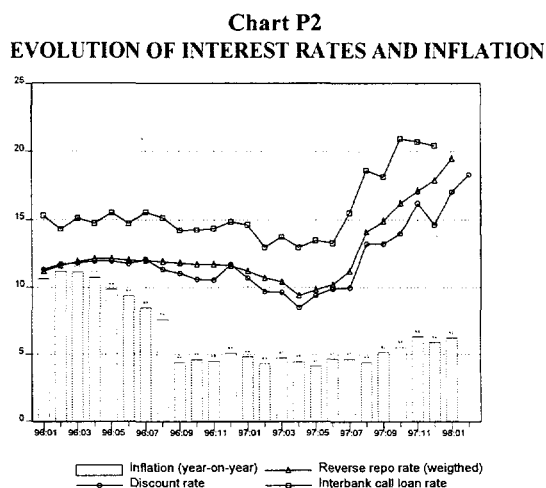
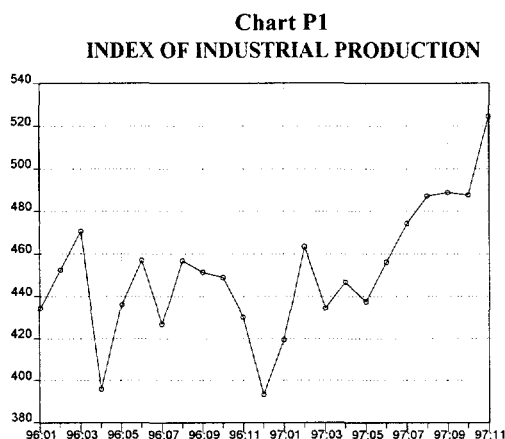


3.4 Philippines

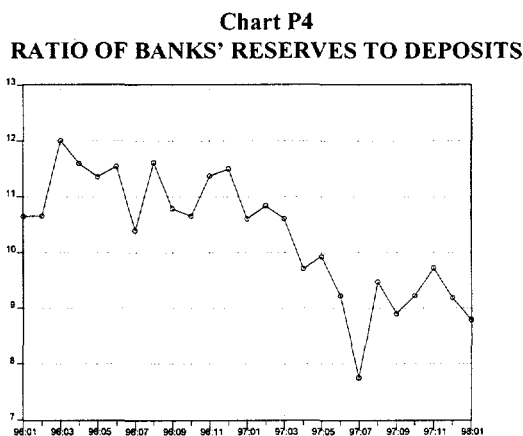
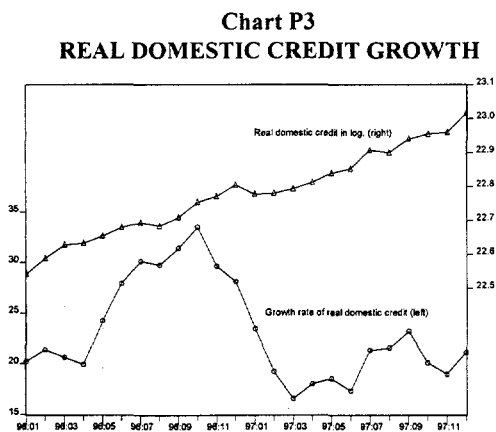
Although there has been a marked increase in interest rates and a sharp weakening of the peso following the crisis, the country did not suffer from the same vulnerabilities of many other economies in the region. During the period under consideration, neither the general risk premium nor the bank dependent borrowers' specific spread shows notable increases. Accordingly, the usual indicators of a credit crunch do not exist for the Philippines.

Economic growth was already slowing before the regional currency crisis hit the Philippines in July 1997, due mainly to poor performance of the agricultural sector as the El Niño pattern began to take affect. However, the other leading production sector, manufacturing, fared much better, partially offsetting the dismal performance of the agricultural sector (Chart P1).

Despite the sharp depreciation of the currency since July 1997, inflation has remained subdued (Chart P2), considerably below market expectations. This was mainly because of plentiful supplies of domestically produced rice -- a major component of the food, beverage and tobacco group which accounts for 60 percent of the basket. A significant slowdown in private consumption in response to the crisis was an additional contributing factor to the materialization of the lower than expected inflation.



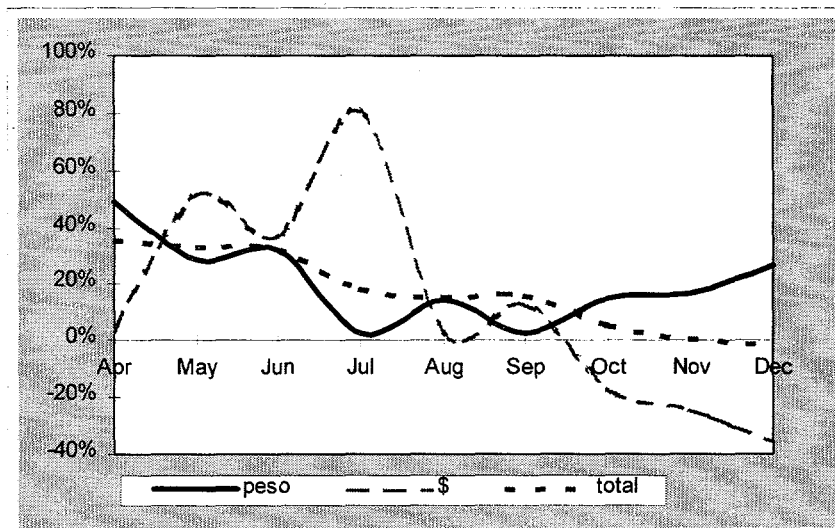
The lower than expected inflation performance, however, did not prevent interest rates from rising in the wake of the currency turmoil. As can be seen from Chart P2, interest rates have been increasing since July 1997.



The evolution of aggregate credit and liquidity conditions does not indicate excessive monetary tightening during the period under consideration. At the macro level,

real domestic credit growth (Chart P3) remained high. Moreover, the ratio of banks' total reserves to deposits does not indicate a noticeable decline; it instead exhibits a slight downward trend to be evaluated in the light of successive cuts to the required reserve ratio (Chart P4).

Chart P5
EVOLUTION OF CREDIT TO THE PRIVATE SECTOR¹⁵
 (at constant exchange rate, quarterly moving average, monthly annualized percent change)



Disaggregated data on credit developments reveal that while domestic currency denominated credit has been growing (Chart P5), there has been a marked decline in foreign currency denominated credit.

¹⁵ This chart was contributed by Bernard Funck (EACPF).

CHART P6

SPREAD BETWEEN PESO DENOMINATED AND
USD DENOMINATED DEPOSITS

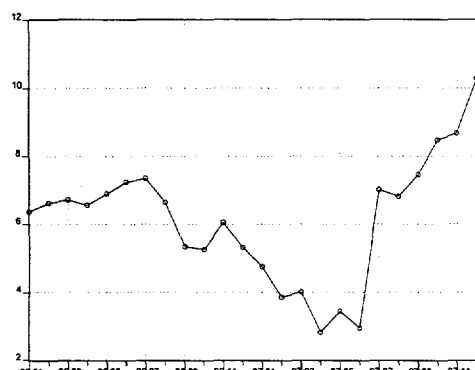
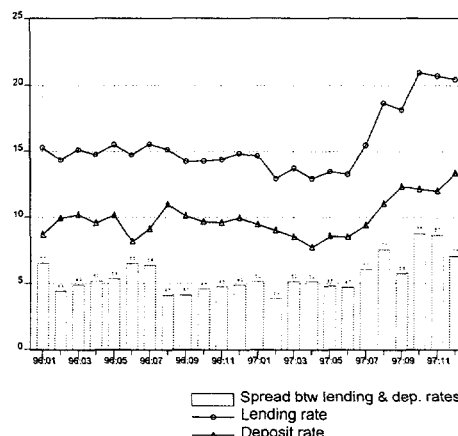


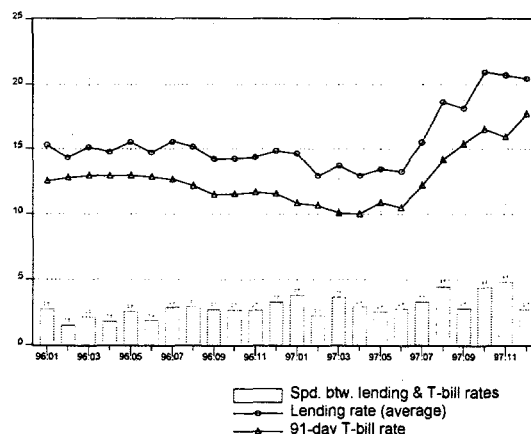
CHART P7

SPREAD BETWEEN LENDING AND DEPOSIT
RATE



This can be explained by the increase in expected depreciation of the peso, as evidenced by the growing spread between peso and dollar denominated deposits (P6) and declining foreign currency deposits in commercial banks. In addition to these observations, it appears that there has not been a significant increase in the sum of the general risk premium and the bank dependent borrowers' specific spread as proxied by the spread between average lending rate and the benchmark 91-day T-bill rate. Consequently, the available information does not provide a notable evidence supporting the existence of balance sheet and lending channels, and thus a credit crunch.

CHART P8
TREND IN LENDING AND T-BILL RATES



3.5 Thailand

On the surface, Thailand does not appear to suffer from a serious liquidity crunch: monetary and credit variables along with interest rate spreads show no sign of it. However, the available interest rate data used here are inadequate for the purpose of our investigation. Additional data will have to be acquired before reaching a firm conclusion on the Thai situation.

As can be seen from the Chart T1, it appears that increases in interest rate (Chart T5 and Chart T6) have not been able to prevent the depreciation of the baht and restore investors' confidence. There is strong indication of a steep downturn: all output indicators are unfavorable. As illustrated in Chart T2, industrial production has been declining drastically: it registered a year-on-year growth rate of **-13.7 %** in February 1998 -- a much sharper decline than had been foreseen.

The evolution of the key monetary and credit variables do not show tight liquidity conditions. As depicted in Chart T3, the real domestic credit exhibits an upward trend. In addition, the growth rate of M2 definition of money is also strong, increasing by 15.4% (year-on-year) in March 1998.

These indicators can, however, be misleading if one concludes that there is no credit crunch in Thailand. Lending that is taking place could be mostly remedial -- i.e. extending lines of credit to existing clients in difficulty to prevent a further increase in the volume of non-performing loans.

Chart T1
EVOLUTION OF STOCK-EXCHANGE INDEX
AND THE EXCHANGE RATE

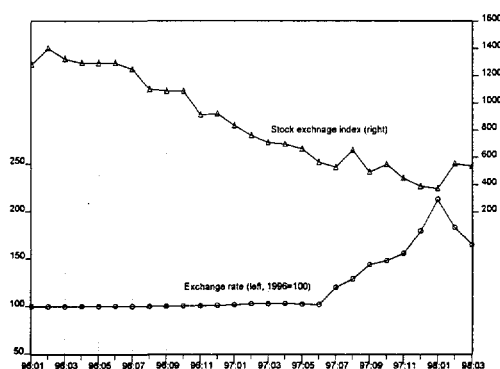
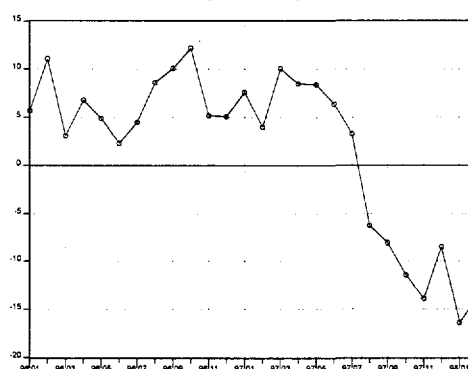
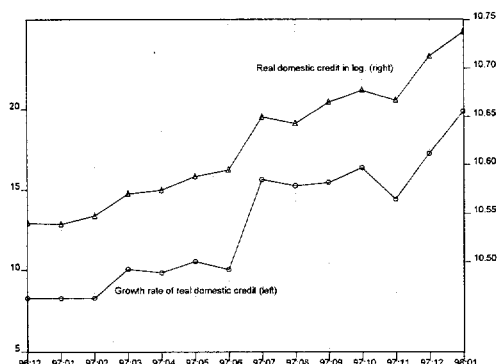


Chart T2
CHANGE IN INDUSTRIAL PRODUCTION
(year-on-year)

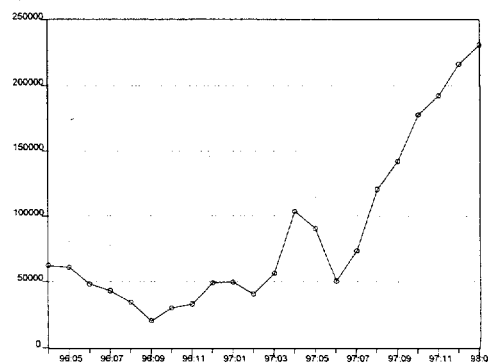


In addition, bank deposits have been increasing as a result of the flight to banks from the distressed finance companies. Chart T4 shows how liquidity is flowing through the banking system.

**CHART T3
REAL DOMESTIC CREDIT GROWTH**

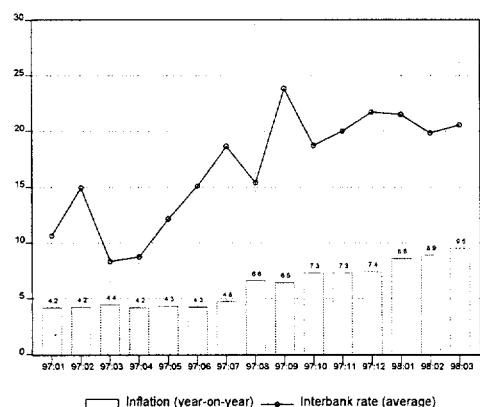


**CHART T4
BANKS' EXCESS LIQUID ASSETS (millions of Baht)**

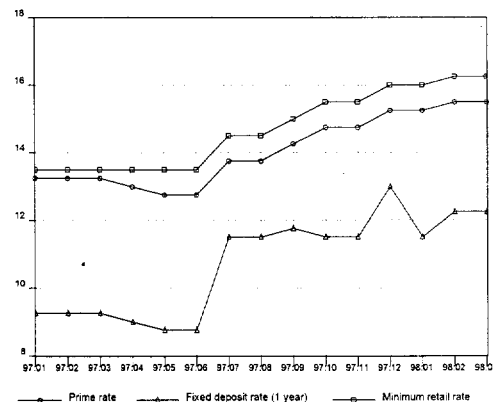


Indeed, the permanent closure of 56 finance companies in December 1997 eliminated the main source of financing for small businesses and left the consumer credit system in great difficulty. The remaining 35 finance companies and 15 commercial banks were required to make higher provisions, and their percentage of non-performing loans are expected to increase as the economic downturn deepens.¹⁶

**Chart T5
EVOLUTION OF INTERBANK RATE AND INFLATION**



**CHART T6
TREND IN SOME KEY INTEREST RATES**



¹⁶ Based on the latest available data from the Central Bank, the non-performing loans of the banking system represented 8.3% of total loans as of June 1997. By December they were estimated to have reached 18% and are expected to peak 25-30% in the middle of 1998. In May 1998, a further 13 finance companies were closed.

Unfortunately, because data on government bond yields for Thailand were not readily available, we had to use the yield on bonds issued by state owned enterprises without knowing the goodness of the approximation. In addition, average bank lending rates were also unavailable, leaving us no choice but to use the prime lending rate which may be particularly inappropriate for gauging changes in the cost of borrowing for the average customer in the course of a crisis.

With these caveats in mind, we find no evidence of the balance sheet or the lending channels to be at work in Thailand. The spread between the prime rate and the risk-free yield shrinks in the aftermath of the crisis (Chart T8), surprisingly hint that the General Risk Premium may have decreased. At the same time, the wedge between the minimum lending rate at finance companies and the prime rate widens (Chart T7), which is consistent with the hypothesis that SMEs suffer a sharper increase in the cost of borrowing.

CHART T7
SPREAD BETWEEN FINANCE COMPANIES' MINIMUM
(AVERAGE) LENDING RATE AND PRIME RATE

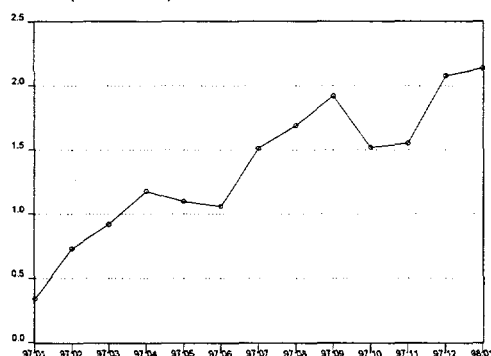
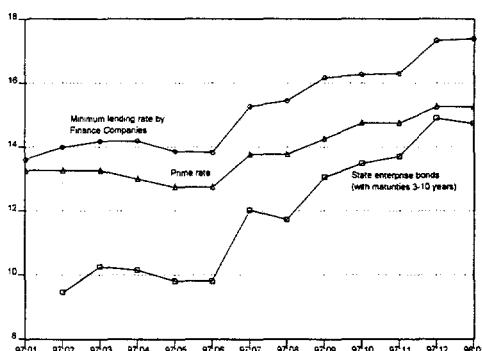
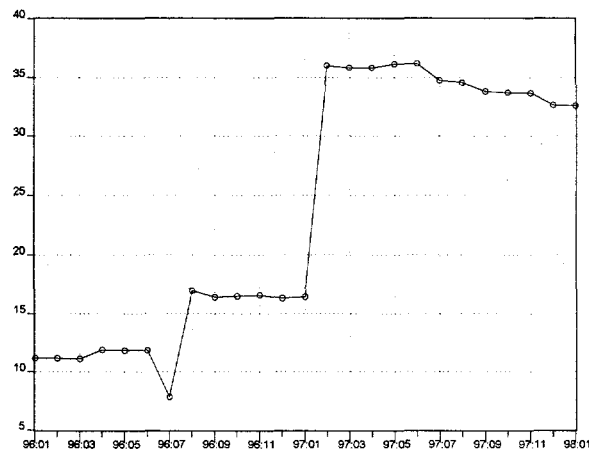


CHART T8
EVOLUTION OF LENDING RATES AND BONDS ISSUED BY
SOEs



It should be pointed out that the lack of evidence of a credit crunch through the price mechanism does not preclude the possibility that the shocks hitting Thailand exerted a negative impact via increased **credit rationing**; though this conjecture cannot be empirically validated due to lack of data.

CHART T9
SPREAD BETWEEN FINANCE COMPANIES'
MAXIMUM AND MINIMUM (AVERAGE) LENDING RATES



As can be seen from Chart T10, the share of government securities in commercial banks' total assets exhibits an upward trend since August 1997. It appears that banks have increased their holdings of government securities in relation to their total assets. This, in turn, may be interpreted as a sign of a decline in bank willingness to lend, thereby providing support to the existence of **flight to quality in bank lending**.

At the same time, the upward trend of the share of foreign currency deposits in commercial banks' total liabilities and widely documented evidence of shift of deposits from distressed finance companies to banks suggest that there has been **flight to quality by depositors** as well. Given banks' reluctance to increase their foreign exchange risk exposure, this shift in composition of deposits can have a negative impact on Bank's ability to lend. Similarly, customers of now-closed finance companies may not be able to establish banking relationship with new lenders immediately, thus facing an additional obstacle in their ability to borrow.

CHART T10
THE RATIO OF CLAIMS ON GOVERNMENT TO
TOTAL ASSETS OF COMMERCIAL BANKS

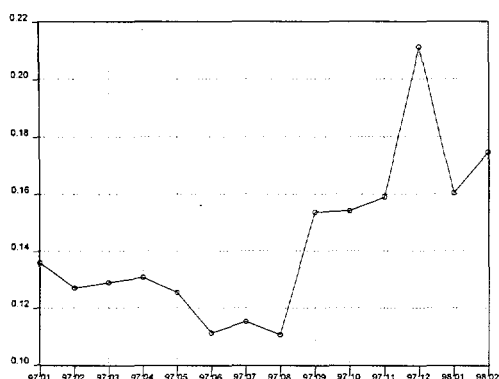
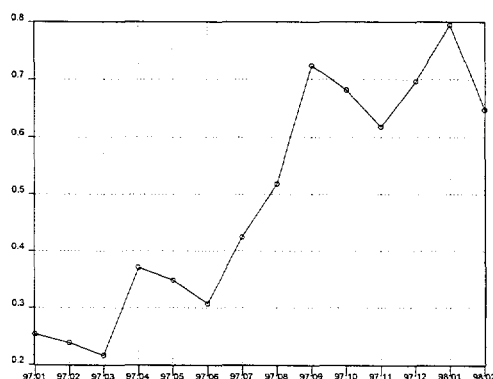


CHART T11
THE SHARE OF FOREIGN CURRENCY DEPOSITS IN
TOTAL LIABILITIES OF COMMERCIAL BANKS



4. CONCLUSIONS

To what extent can tight monetary policy help restore market confidence? This has been a crucial question in the aftermath of the East Asian crisis. Some have argued that under the prevailing circumstances, rising real interest rates might fail to bolster market confidence or might even be counter-productive.¹⁷ Indeed, some of the features of the East Asian economies, i.e. bank-based financial systems and high leverage, appear particularly conducive to a significant credit channel of transmission of monetary policy shocks. The magnifying effects stemming from this channel render these economies particularly vulnerable to monetary policy shocks. It is therefore surprising how little or no effort has been made so far to apply the credit channel literature to help explain the propagation of the East Asian crisis.

This paper attempts to fill this void by applying the framework derived from the literature on the credit channel to crisis countries. The main findings of our investigation highlight the fact that a credit crunch is negatively affecting East Asian economies, particularly small-sized banks and enterprises. Based on our findings we are inclined to conclude that protracted and heavy reliance on tight monetary policy may be counter-productive to restoring market confidence in these economies. It would therefore be

¹⁷ For instance, Feldstein (1998) claims that high real interest rates caused more harm than good by leading to widespread bankruptcies and thus undermining the prospect of loan repayment.

desirable to consider other policy instruments which do not place further stress on the banking sector and on its lending to the corporate sector. In addition, policy actions seem warranted to alleviate the strain that the crisis has put on small-sized banks and enterprises.

Our analysis could be extended in several respects. First, although we deliberately left aggregate variables in the background, our results would be more robust if they were confirmed at a lower level of aggregation. Analyses at the sectoral or even micro level would make important contributions to a better understanding of the credit crunch phenomenon. Second, we presented only descriptive evidence and our conclusions would be further strengthened by the use of formal econometric techniques. Finally, we touched only briefly on the policy responses that could help relieve the credit crunch which certainly deserves further work.

References

- Bernanke, B.S. and A.S. Blinder (1988), *Credit, Money and Aggregate Demand*, American Economic Review, May, 78, pp. 435-39.
- Bernanke, B.S. and M. Gertler (1995), *Inside the Black Box: The Credit Channel of Monetary Policy Transmission*, Journal of Economic Perspectives 9, 27-48.
- Bernanke, B.S., M. Gertler, and S. Gilchrist (1996), *The Flight to Quality and the Financial Accelerator*, Journal of Economics and Statistics,
- Bernanke, B.S. and C.S. Lown (1992), *The Credit Crunch*, Brookings Papers on Economic Activity, pp. 205-39.
- Berger, A.N., A.K. Kashyap and J.M. Scalise (1995), *The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been*, Brookings Papers on Economic Activity, pp. 55-218.
- Council of Economic Advisors (1991), *Economic Report of the President*, Washington, DC.
- Feldstein, M. (1998), *Refocusing the IMF*, Foreign Affairs, March/April 1998, pp. 20-33.
- Federal Reserve Bank of New York (1993), *Credit and the Macroeconomy*, Quarterly Review, Spring 1993.
- Gertler, M. and S. Gilchrist (1994), *Monetary Policy, Business Cycles and the Behavior of Small Manufacturing Firms*, Quarterly Journal of Economics, May, 109, pp. 309-40.
- Gertler, M., R. Hubbard, and A.K. Kashyap (1990), *Interest Rate Spreads, Credit Constraints, and Investment Fluctuations: An Empirical Investigation*, NBER working paper No. 3495, October.
- Greenwald, B.C. and J.E. Stiglitz (1993), *Financial Market Imperfections and Business Cycles*, Quarterly Journal of Economics, 108, pp. 77-114.
- Hubbard, R. G. (1995), *Is there a credit channel for monetary policy?*, Economic Review of the Federal Reserve Bank of St. Louis; 77:63-77, May/June.
- IMF (1998), *World Economic Outlook*, May 1998.

- JP Morgan Economic Research (1998), *Asian Financial Markets: Second Quarter 1998*, pp. 3-5.
- Kashyap, A.N. and J.C. Stein (1994), *Monetary Policy and Bank Lending*, in N.G. Mankiw (ed.) Monetary Policy, University of Chicago Press, Chicago.
- Kashyap, A.N. and J.C. Stein (1997), *What Do a Million Banks Have to Say About the Transmission of Monetary Policy*, NBER working paper No. 6056, June.
- Kashyap, A.K., J.C. Stein, and D.W. Wilcox (1993), *Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance*, American Economic Review, 83, pp. 78-98.
- Kyiotaki, N. and J. Moore (1997), *Credit Cycles*, Journal of Political Economy, 105, pp. 211-48.
- Lang, W.W. and L. Nakamura (1995), *Flight to Quality in Banking and Economic Activity*, Journal of Monetary Economics, vol. 36, pp. 145-64.
- Mankiw, N.G. (1986), *The Allocation of Credit and Financial Collapse*, Quarterly Journal of Economics, vol. 101, pp. 455-70.
- Mishkin, F.S. (1998), *International Capital Movements, Financial Volatility and Financial Instability*, NBER WP Series (U.S.), No. 6390:1-33, January.
- Mishkin, F.S. (1991), *Asymmetric information and financial crises: a historical perspective*, in R.G. Hubbard (ed.), Financial markets and financial crises, University of Chicago Press, pp. 69-108.
- Radelet, S. and J. Sachs (1998), *The Onset of the Asian Financial Crisis*, mimeo, Harvard Institute for International Development, March.
- Stiglitz, J.E. and A. Weiss (1981), *Credit Rationing in Markets with Imperfect Information*, American Economic Review, 71, pp. 393-410.

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